Figure 12 depicts the exploration vehicle enroute some two days out from earth. Two crewmen are examining the vehicle's primary shock absorbers at the same time several empty propellant magazines are being ejected.

Figure 13 is an operational scene in Mars orbit. One Mars excursion module is making a descent to the surface while the second is being checked out to stand by. The nuclear pulse vehicle, nearby, continues to be the base of operations.

The final Fig. 14 pictures the nuclear pulse vehicle having again returned to earth orbit. It is intact and complete except down now to its reserve propellant supply and minus the excursion vehicles left at Mars. An earth reentry vehicle from the manned orbiting station has coupled to the nuclear pulse vehicle to pick up personnel for return to the surface.

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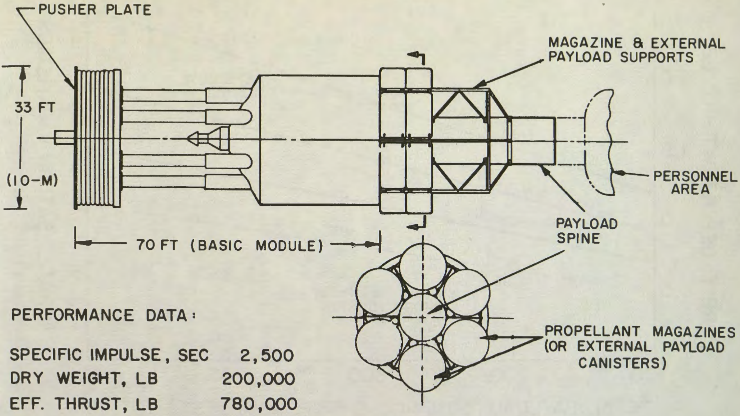

Fig. 1—The 10-meter nuclear pulse propulsion module

LUNAR:	FERRY	BASE SUPPORT	LOGISTICS
VENUS:	ORBITAL EXPLOR.	ORBITAL RECON. STATION	
MARS:	ORBITAL CAPTURE	SURFACE EXCURSION	SYNODIC SURFACE BASE
MERCURY:	ORBITAL CAPTURE	ORBITAL RECON. STA.	SURFACE EXCURSION
JUPITER:	FLY-BY	MOON ORBIT	MOON SURFACE EXCURSION

PLUS ADVANCED PROBES

PLUS FAST RESCUE MISSIONS

Table 1—Potential planetary applications for nuclear pulse propulsion

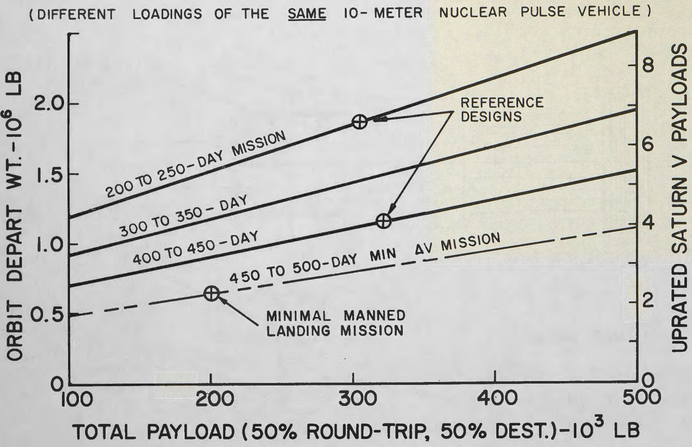

Fig. 2—Mars mission options using a 10-meter nuclear pulse vehicle

	200 TO 250-DAY		400 TO 450-DAY	
ROUND-TRIP PAYLOAD, LB		144,000		160,000
STRUCTURE, FURNISHINGS	50,000		52,000	
RADIATION SHELTER	40,000		40,000	
SPARES, MAINT. EQUIP., ETC	10,000		12,000	
FOOD & ECOLOGY SUPPLIES	21,000		28,000	
ABORT & SPIN PROPELLANT	14,000		18,000	
CONTINGENCY	7,400		8,400	
PERSONNEL (8)	1,600		1,600	
DESTINATION (MARS) PAYLOAD		160,000		160,000
MARS EXCURSION MODULES (2)	130,000		130,000	
UNMANNED RESEARCH VEHICLES	12,000		12,000	
SCIENTIFIC EQUIP & PROBES	10,000		10,000	
MISCELLANEOUS	8,000		8,000	
NU PULSE PROPULSION MODULE		200,000		200,000
PROPELLANT AND MAGAZINES		1,340,000		625,000
ORBIT DEPARTURE WEIGHT (LB)		1,844,000		1,145,000

Table 2—Summary weight statements for two reference-design Mars missions

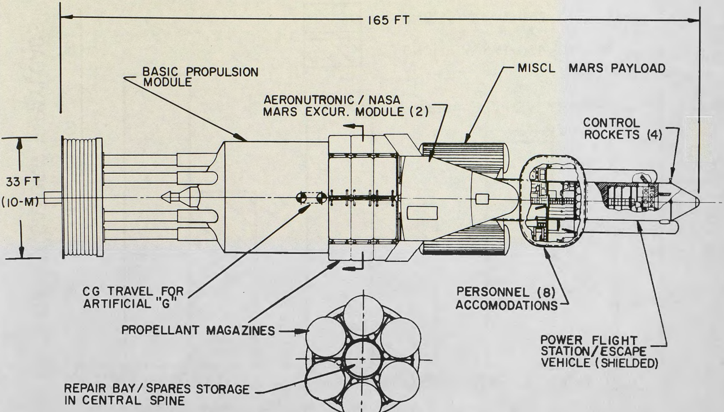

Fig. 3—A 10-meter nuclear pulse vehicle for an exploration trip to Mars

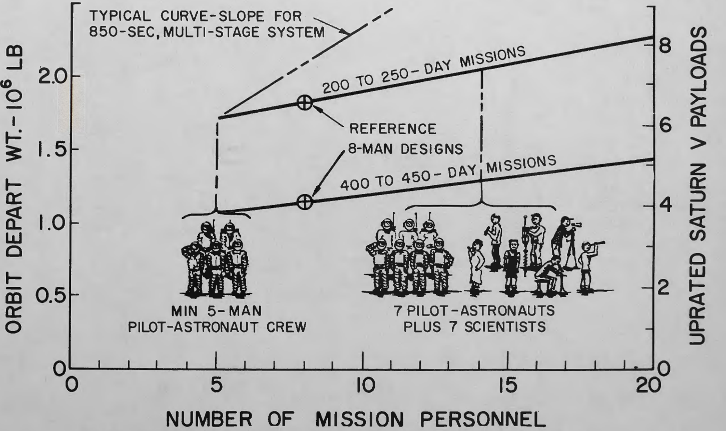

Fig. 4—Effect of personnel complement on departure weight of the vehicle

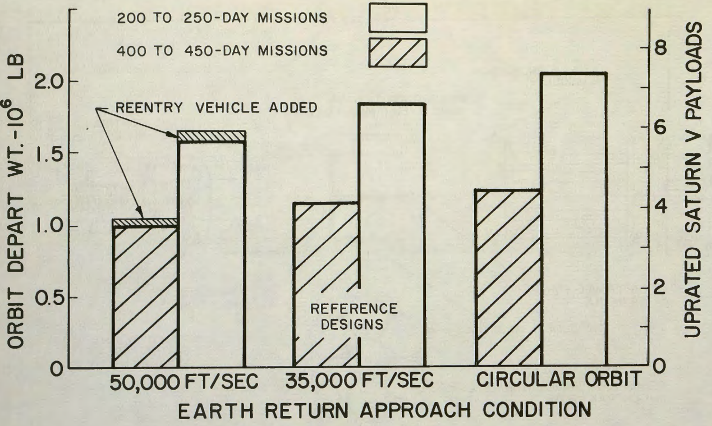

Fig. 5—Vehicle departure weight sensitivity to earth return conditions

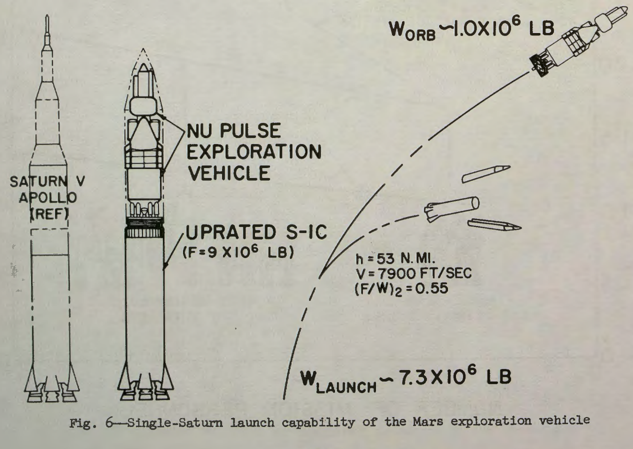

Fig. 6—Single-Saturn launch capability of the Mars exploration vehicle

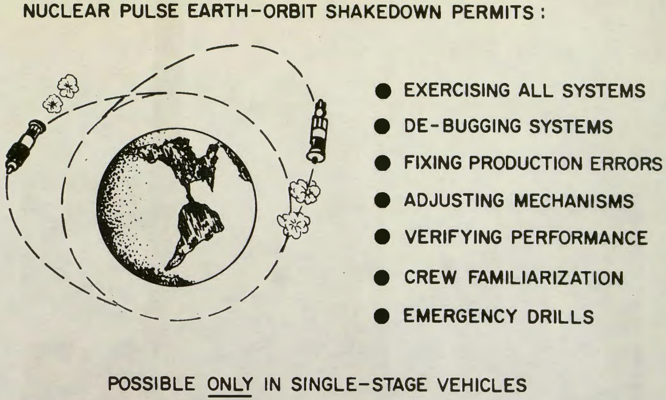

Fig. 7—Operational benefits of a pre-departure earth-orbit shakedown

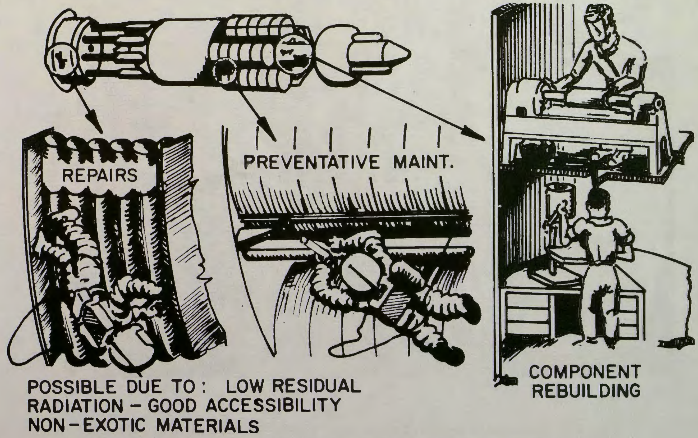

Fig. 8—Coast period maintenance capability of the nuclear pulse vehicle

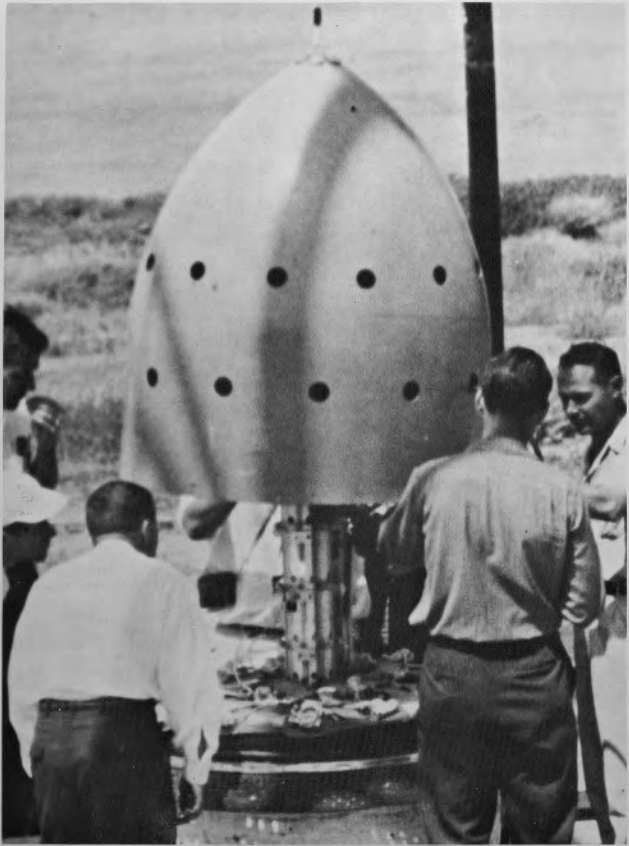

Fig. 9—High-explosive-propelled pulse vehicle model first flown in October 1959

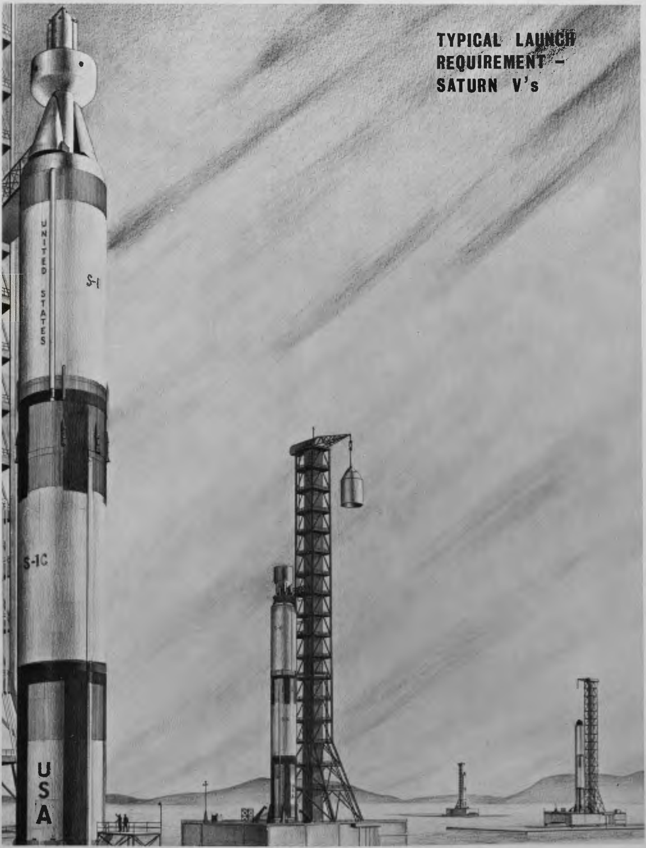

Fig. 10—Launch requirement for typical Mars surface excursion mission using the Saturn V earth launch vehicle

Fig. 11—Fully loaded nuclear pulse vehicle in earth orbit shakedown cruise prior to departure

Fig. 12—Enroute maintenance and ejection of empty propellant magazines two days after earth departure

Fig. 13—Mars excursion module final checkout and operations while in Mars orbit

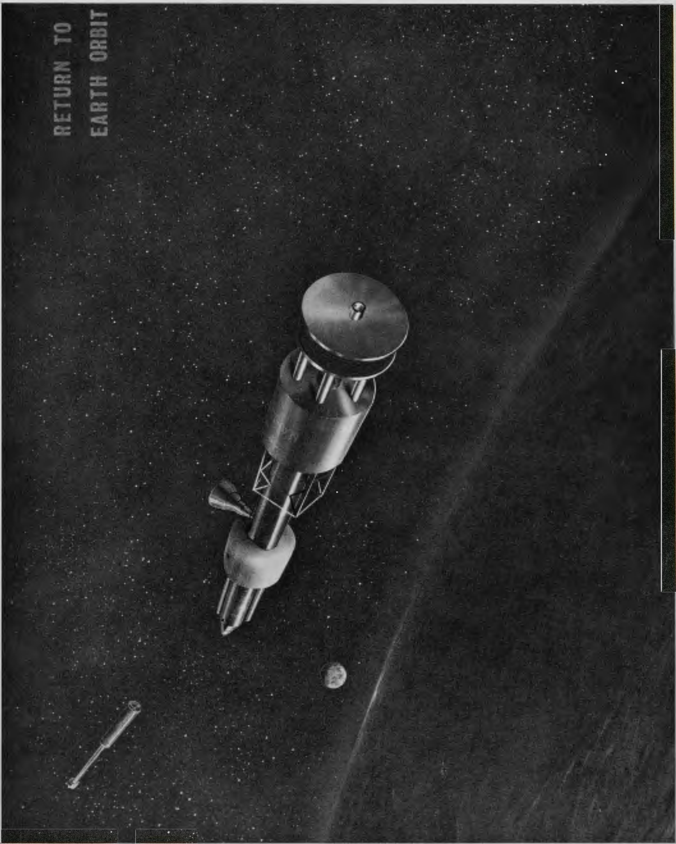

Fig. 14—Return to earth orbit and rendezvous with reentry vehicle at conclusion of Mars trip